A NEW GENUS AND SPECIES OF ANT-MIMICKING JUMPING SPIDER (ARANEAE: SALTICIDAE) FROM SOUTHEAST QUEENSLAND, WITH NOTES ON ITS BIOLOGY

MICHAEL G. RIX

Rix, M.G. 1999 06 30: A new genus and species of ant-mimicking jumping spider (Araneae: Salticidae) from southeast Queensland, with notes on its biology. *Memoirs of the Queensland Museum* **43**(2): 827-832. Brisbane. ISSN 0079-8835.

A new genus and species, *Judalana lutea*, is described. Cheliceral horns in the male and enlarged spermathecae in the female separate *Judalana* from *Rhombonotus*. ❐ *Salticidae, Judalana, Rhombonotus, Queensland, Australia.*

Michael G. Rix, 118 Arnold Street, Holland Park 4121, Australia; 4 August 1998.

Studies on jumping spiders in Queensland have been largely taxonomic, e.g. Davies & Zabka (1989). There are also a number of behavioural studies on N Queensland taxa including *Portia* (see Jackson, 1982), *Myrmarachne 'lupata'* (see Jackson, 1986a), *Mopsus mormon* (see Jackson, 1983), *Euryattus* (see Jackson, 1985a), *Siwaetha* (see Jackson, 1985b), *Cosmophasis* (see Jackson, 1986b), *Bavia* (see Jackson, 1986c), *Jacksonoides* (see Jackson, 1988a) and *Tuala* and associated prey (Jackson, 1988b), to name but a few.

During studies on the spiders of SE Queensland, a new ant-mimicking jumping spider resembling the pluridents *Rhombonotus* was discovered on *Acacia* bushes. It is described here.

METHODS

Descriptions are based on specimens preserved in 75% ethanol. All measurements in millimetres and are taken by camera lucida projection.

Order ARANEAE
Family SALTICIDAE
Group PLURIDENTATI

Judalana gen. nov.

ETYMOLOGY. For my parents, Judy and Alan.

TYPE SPECIES. *Judalana lutea* sp. nov.

DIAGNOSIS. The unique presence of frontal cheliceral horns in the male and enlarged, bulbous spermathecae in the female separate *Judalana* from other related taxa. As in *Rhombonotus*, the posterior lateral eyes (PLE) are on the edge of the carapace and the insemination ducts are simple and uncoiled. Males with two abdominal scuta.

SPECIES INCLUDED. *Judalana lutea* sp. nov.

DESCRIPTION. Small ant-mimicking salticids with bright, yellow-orange abdomen. Cylindrical and slender, these spiders are distinctive pluridents.

COMPARISON. *Judalana* appears to be closely related to the other 4 genera of Australian pluridents ant mimics: *Ligonipes*, *Rhombonotus*, *Damoetas* and *Myrmarachne*. The diagnoses of these genera are confused and a revision is needed. *Judalana*, however, differs from the above genera (as defined by Davies & Zabka, 1989) by the posession of enlarged spermathecae in the female and frontal horns on the male chelicerae. An undescribed pluridents ant-mimic from near Birdsville, SW Queensland, also has the latter characteristic, albeit modified.

BIOLOGY. Known only from SE Queensland, Australia, in open forest, *Judalana lutea* are slender, attractive and energetic spiders which so far have been found mainly on *Acacia* bushes, especially *Acacia aulococarpa*. The ant *Opisthopsis rufithorax*, which the adult spiders strongly resemble, can also be found on these bushes.

Judalana lutea sp. nov.
(Figs 1-3)

ETYMOLOGY. Latin *luteus* meaning orange or off-yellow, referring to the distinctive abdominal coloration of this species.

MATERIAL. HOLOTYPE: QMS31518, M, Tarragindi, Brisbane, 27°32'15"S 153°02'30"E, 22 Jun 1996, M. Rix. ALLOTYPE: QMS31519, F, same data. OTHER MATERIAL. QMS41438, 41439, M, F, Mulgowie, 27°44'S, 152°00'E, SE Qld, 25 Mar 1981, M. Grant; QMS41446, F, Kumbarilla, W of Dalby, 27°19'S, 151°00'E, SE Qld, Feb 1978, T. Adams; QMS31523, Redbank Plains, 27°39'S, 152°52'E, SE Qld, 4 May 1997, M, M. Rix; QMS31522, Holland Park, 27°31'S, 153°04'E,

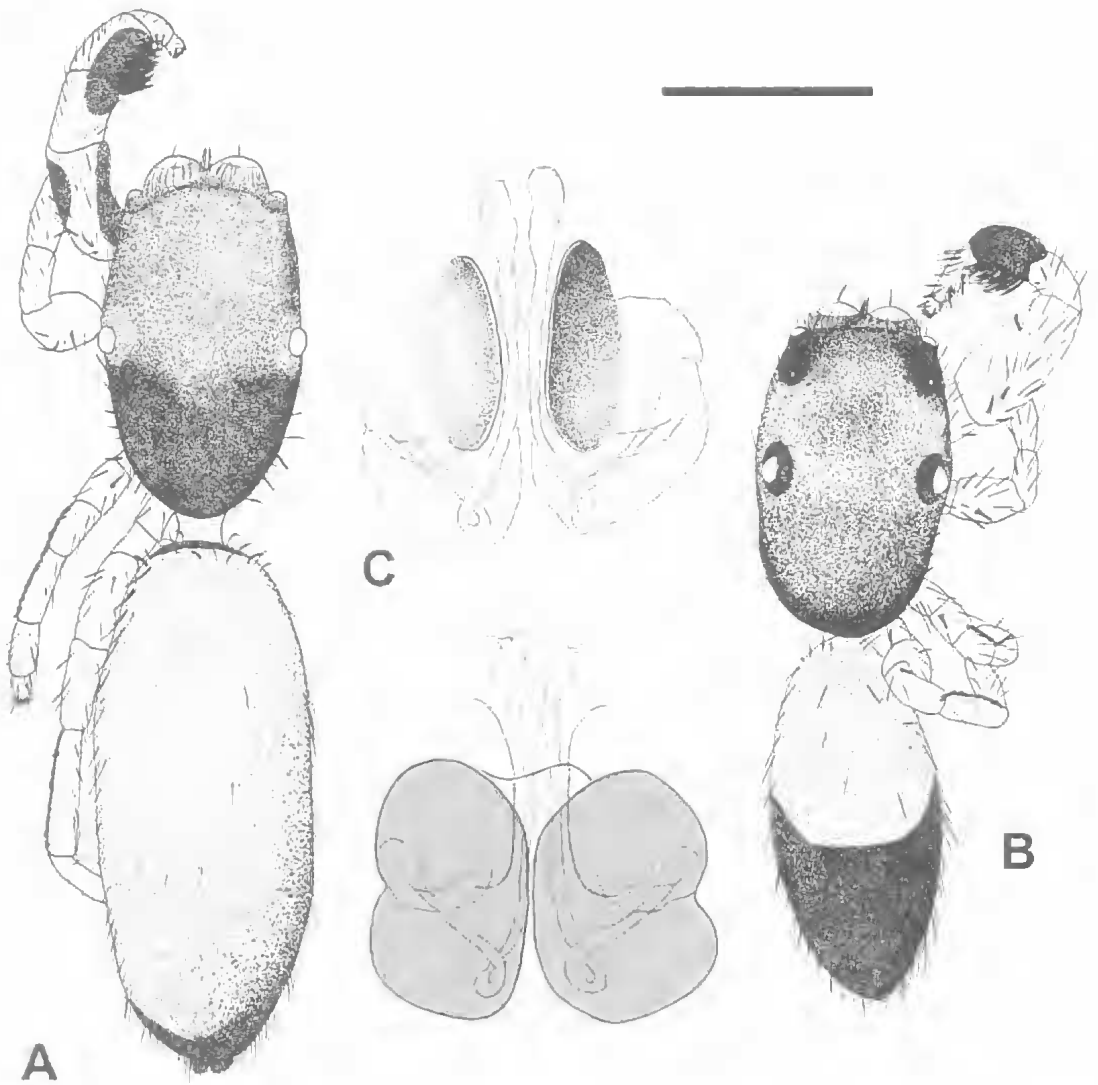

FIG. 1. *Judalana lutea* sp. nov. A, B, habitus. A, allotype female. B, holotype male. C, D, epigynum. C, external; D, internal. Scale bar = 1mm (A,B), 0.26mm (C, D).

SE Qld, 11 May 1997, F, M. Rix; QMS31521, Whites Hill, 27°31'S, 153°05'E, SE Qld, 9 Nov 1997, M, M. Rix; QMS31524, Carina, 27°30'S, 153°06'E, SE Qld, 25 July 1997, F, M. Rix; QMS31520, Mt Coot-tha, 27°29'S, 152°52'E, SE Qld, 4 May 1997, M, M. Rix; QMS43708, Camira, 27°38'S, 152°55'E, SE Qld, 22 Dec 1997, M, K. Walker.

DIAGNOSIS. As for genus.

DESCRIPTION. Holotype male QMS31518. Carapace 1.50 long, 0.90 wide. Abdomen 1.70 long, 0.80 wide. Total length 3.20. Carapace dark orange. All eyes bordered in black. Dorsal abdomen orange anteriorly and black posteriorly; colours centrally divided. Ventral abdomen mottled yellow and black. Carapace with pale hairs laterally. Dorsal row of downward curving setae along top margin of anterior eye row; hairs longer towards the centre. Posterior median eyes (PME) and PLE slightly raised, PLE more so. PLE on edge of carapace. PME closer to anterior eye row than posterior. Abdomen oval, elongated, covered in downy hairs. Leg 1 incrassate; orange with black tibia armed with brush of flattened black hairs. Two short spines on ventro-prolateral edge of tibia I. Three on

TABLE 1. Palp and leg measurements, holotype male QMS31518.

	Palp	I	II	III	IV
Coxae	0.06	0.30	0.24	0.18	0.16
Trochanter	0.12	0.12	0.12	0.10	0.10
Femur	0.49	0.89	0.57	0.51	0.49
Patella	0.16	0.40	0.35	0.29	0.29
Tibia	0.18	0.55	0.33	0.31	0.33
Metatarsus		0.37	0.33	0.41	0.31

TABLE 2. Palp and leg measurements, allotype female QMS31519.

	Palp	I	II	III	IV
Coxae	0.34	0.31	0.25	0.18	0.22
Trochanter	0.12	0.12	0.09	0.08	0.12
Femur	0.18	0.80	0.58	0.53	0.80
Patella	0.34	0.40	0.31	0.27	0.37
Tibia	0.12	0.49	0.31	0.33	0.62
Metatarsus		0.28	0.31	0.39	0.46

retrolateral side of ventral fringe. Other legs yellow with margin of black hairs along patellae and tibiae III and tibiae IV. Metatarsus I ventrally with 2 pairs of short spines. Chelicerae each with a horn projecting forward, the spurs crossing over slightly at tip and superficially not unlike the mandibles of an ant; 4 teeth on retromargin, 4 fused on promargin. Palp nearly twice as long as wide, with many serrated hairs. Tibial apophysis bent markedly to left when palp is at retrolateral position. Embolus long, circling tegulum, before continuing past tip of cymbium. Tip of embolus overturned with thinner continuation. Abdomen with black, dorsal, posterior, abdominal scutum, curving laterally. Lighter coloured anterior, dorsal, abdominal scutum. (See Table 1 for leg measurements)

Allotype female QMS31519. Carapace 1.67 long, 0.90 wide. Abdomen 2.40 long, 0.98 wide. Total length 4.14 (including pedicel). Carapace black. Dorsal abdomen orange. Ventrally black with orange epigynum. Carapace with pale hairs laterally. Dorsal row of downward curving setae along top margin of anterior eye row; hairs longer toward the centre. PME and PLE slightly raised, PLE more so. PLE on edge of carapace. PME closer to anterior eye row than posterior. Cheliceral dentition differs from that of the male, 3 fused teeth on both pro- and retrolateral margins. Exterior epigynum with oval fossae. Simple, uncoiled insemination ducts internally leading to enlarged, bulbous spermathecae. Fertilisation ducts long and ventrally obvious. Abdomen oval and elongated, covered in downy hairs. Legs I incrassate; tibia armed with thick brush of flattened black hairs. Two short spines on ventroprolateral edge of tibia I. Three on retrolateral side of ventral fringe. Metatarsus I with four short spines. Other legs pale yellow with margin of black hairs along the patellae and tibiae III and tibiae IV. (See Table 2 for leg measurements)

DISTRIBUTION. *J. lutea* is known from several open sclerophyll forests in SE Queensland with areas of *Acacia* scrub. These include localities in the greater Brisbane area (Tarragindi, Holland Park, Mt Coot-tha, Redbank Plains, Whites Hill, Carina, Camira) and, to the west, Mulgowie and Kumbarilla.

BIOLOGY. To date this cryptic species has been found mainly on *Acacia* bushes and occasionally on eucalypts. Leaves have been folded lengthways or at the tip to create a retreat, with the spider usually concealed inside under a sheet of white silk. This species mimics the ant *Opisthopsis rufithorax*; the adults are similar in size and colour, the male being more like the ant than the female. No specimen has been seen to eat ants.

LIFE HISTORY. The egg sac of *J. lutea* is concealed in the folded leaf that the mother prepares. The egg sac is made of flocculent white silk and contains about 11-14 striking orange eggs. A female with her egg sac stayed with it until the eggs hatched, after which she died. Some females bind their brood chambers with separate parallel bars of silk, attached to the edges of the folded leaf. Adult females are often found inside the folded leaves with their brood. Newly hatched juveniles are very similar in appearance to common small black ants found in the forest. This resemblance is, however, short-lived as they attain their bright adult colour after only a few moults. It is unknown if they feed on these ants in the wild. In captivity, they take tiny flies. Males can be found roaming but have also been found with a female in the folded leaves. Males have not been found with a brooding female. One tiny scelionid wasp, probably *Idris* sp. has been found to attack the eggs of *J. lutea*. In early November 1996, an egg sac in captivity taken from the type locality hatched out several of these wasps. Spiderlings also hatched, so in this case the wasps did not parasitise all the eggs. A male of *J. lutea* was also taken from the nest of a mud wasp, *Sceliphron* sp (Sphecidae).

SYMPATRIC SALTICIDS. The site where *J. lutea* was first discovered, Redbank Plains near

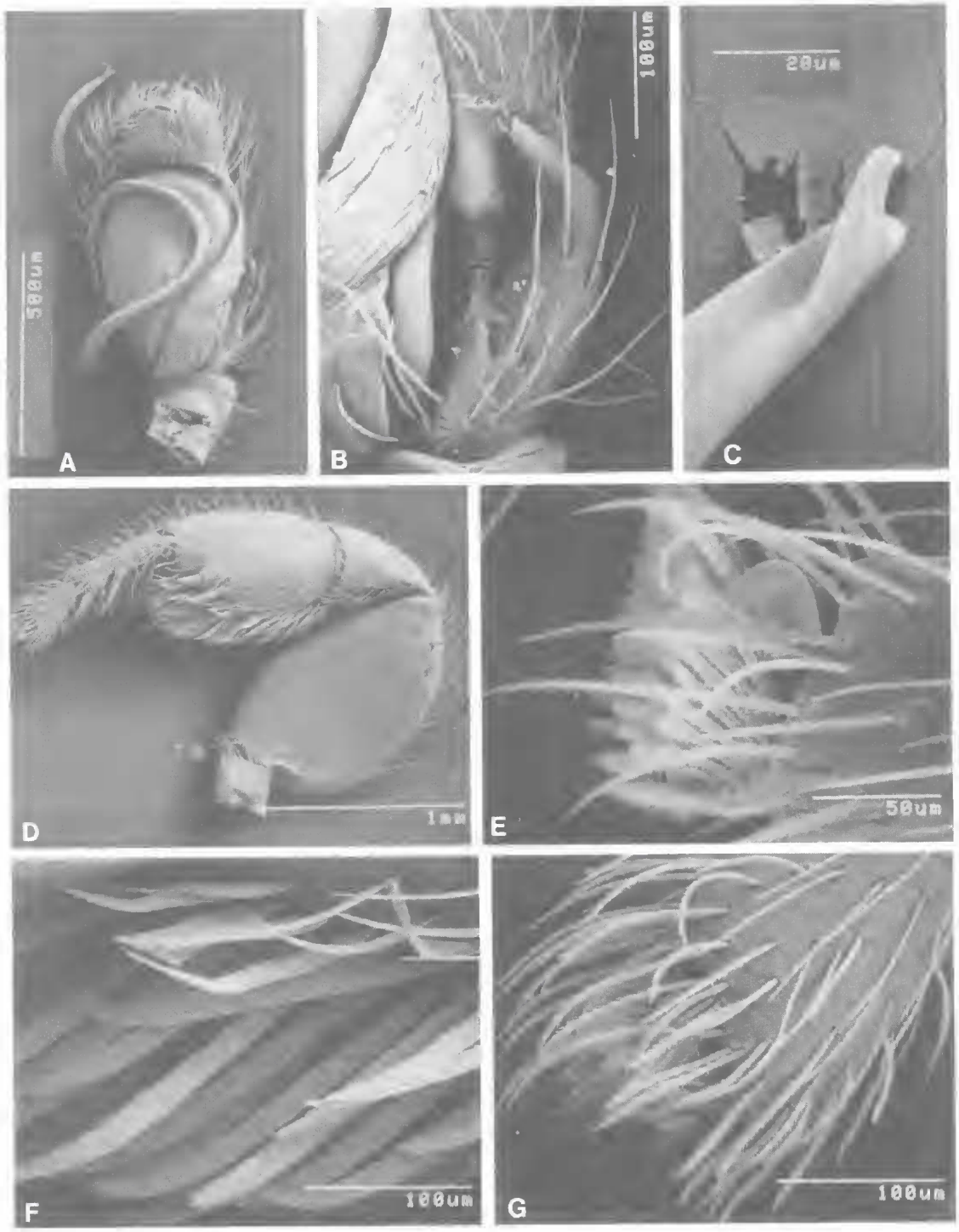

FIG. 2. *Judalana lutea* sp. nov. Scanning electron micrographs. A-C, ventral left palp, male. A, ventral view, bulb; B, tibial apophysis, retrolateral view showing bend; C, tip of embolus, showing curved tip and opening of sperm duct. D-G, leg I, ventral right, male. D, prolateral view; E, G, tip of tarsus & claws; F, tibial hairs.

50%

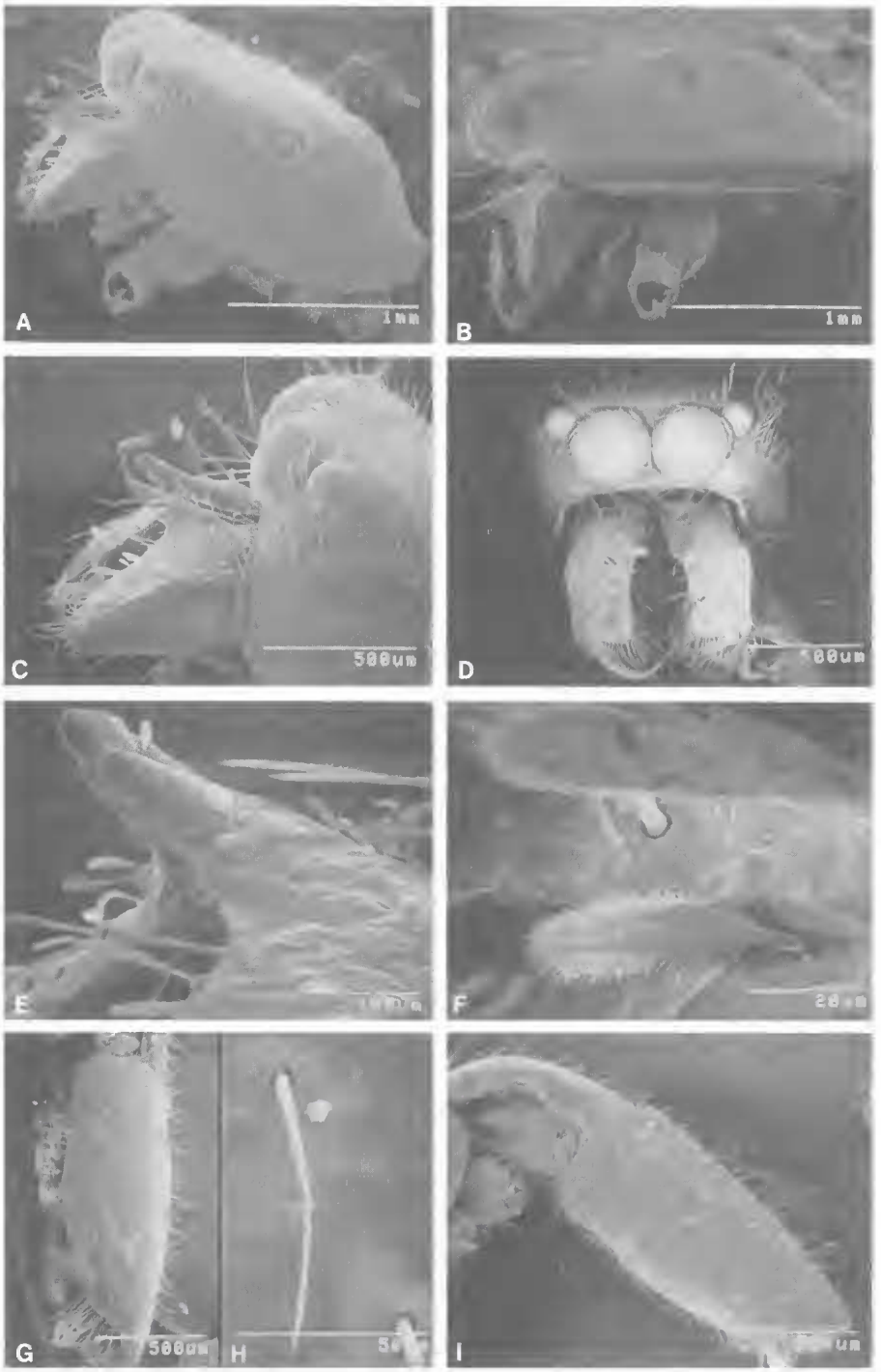

FIG. 3. *Judalana lutea* sp. nov. Scanning electron micrographs. A-C, male, cephalothorax. A, C, dorsolateral view showing spurs; B, lateral view. D, eyes & chelicerae, frontal view. E, cheliceral horns, lateral view. F, cheliceral setae at base of horn, lateral view. G-I, abdomen, male. G, H, posterior dorsal scute; G, ventrolateral view showing curvature; H, enlargement showing transverse ridges & hairs; I, lateral view showing division between anterior and posterior dorsal scuta.

Ipswich, SW of Brisbane, is also home to a species of *Myrmarachne* which mimics the same ant species and has also been found on *Acacia* bushes.

ACKNOWLEDGEMENTS

To Robert Raven of the Queensland Museum for his invaluable guidance and encouragement in the preparation of this paper, and to Gordon Gordh of the University of Queensland for his assistance in the identification of the ant mentioned in the text. To Valerie Todd Davies for her assistance and to the referees for their detailed and constructive comments. Thanks are also due to Andrew Austin, University of South Australia, for his help in identifying the parasitic wasp and to Chris Burwell, Queensland Museum, for identifying the mudwasp.

LITERATURE CITED

DAVIES, V. TODD & ZABKA, M. 1989. Illustrated keys to genera of jumping spiders (Araneae: Salticidae) in Australia. Memoirs of the Queensland Museum 27(2): 189-266.

JACKSON, R.R. 1982. The biology of *Portia fimbriata*, a web-building jumping spider (Araneae, Salticidae) from Queensland: intraspecific interactions. Journal of Zoology, London 196: 295-305.

1983. The biology of *Mopsus mormon*, a jumping spider (Araneae: Salticidae) from Queensland: intraspecific interactions. Australian Journal of Zoology 31(1): 39-53.

1985a. The biology of *Euryattus* sp. indet., a web-building jumping spider (Araneae: Salticidae) from Queensland: utilisation of silk, predatory behaviour and intraspecific interactions. Journal of Zoology, London (B)1: 145-173.

1985b. The biology of *Simaetha paetula* and *S. thoracica*, web-building jumping spiders (Araneae: Salticidae) from Queensland: eo-habitation with social spiders, utilisation of silk, predatory behaviour and intraspecific interactions. Journal of Zoology, London (B)1: 175-210.

1986a. The biology of ant-like jumping spiders (Araneae: Salticidae): prey and predatory behaviour of *Myrmarachne* with particular attention to *M. lupata* from Queensland. Zoological Journal of the Linnean Society 88(2): 179-190.

1986b. The display behaviour of *Cosmophasis micarioides* (L. Koch) (Araneae: Salticidae): a jumping spider from Queensland. New Zealand Journal of Zoology 13(1): 1-12.

1986c. The display behaviour of *Bavia aericeps* (Araneae: Salticidae), a jumping spider from Queensland. Australian Journal of Zoology 34(3): 381-409.

1988a. The biology of *Jacksonoides queenslandica*, a jumping spider (Araneae: Salticidae) from Queensland: intraspecific interactions, web-invasion, predators and prey. New Zealand Journal of Zoology 15(1): 1-37.

1988b. The biology of *Tuala lepidus*, a jumping spider (Araneae: Salticidae) from Queensland: display and predatory behaviour. New Zealand Journal of Zoology 15(3): 347-364.